## REMARKS

A response to the initial Office Action was due September 12, 2003. A Request for One-Month Extension of Time, and the associated fee, are enclosed. Accordingly, the extended response period expires October 12, 2003. Since October 12, 2003 is a Sunday and October 13, 2003 is Columbus Day, a national holiday, this response, being submitted under a Certificate of Mailing on October 14, 2003, is timely filed.

Reconsideration of this application, as amended, is respectfully requested.

By this Amendment, several obvious informalities in the specification and the Abstract are being rectified, and claims 1-3, 5, 6, 19, 20 and 22 are being amended to more particularly point out and distinctly claim the subject invention. The addition of "new matter" has been scrupulously avoided. Claims 1-22 remain in this case.

In the initial Office Action, claim 19 was rejected under 35 U.S.C. 112, second paragraph as indefinite because there was no antecedent basis for the phrase "said conducting material". Claim 19 has been amended to depend from claim 8 which provides the required antecedent basis. Accordingly, the Examiner is requested to withdraw this rejection.

Original claims 1-3 and 20-22 have been rejected under 35 U.S.C. 103(a) as allegedly obvious over Hoenig (U.S. Patent No. 4,670,026). All of the other original claims were rejected under 35 U.S.C. 103(a) as allegedly obvious over the same reference in view of additional references. To the extent that these rejections are deemed applicable to the claims as now presented, the rejections are respectfully, but most strenuously traversed.

Applicants' independent claims 1, 20 and 22 have been amended to specify a particle charger (or particle charging step) including a source of ions located outside of the aerosol flow. This feature helps to ensure removal of particles from a flow of an aerosol with no appreciable change to the thermodynamic conditions and chemical composition of a gas phase of the aerosol.

In contrast, the corona discharge needles (6, 12) of the Hoenig apparatus are clearly located in the aerosol flow of the prior art device. The same is true for all of the other applied references. Accordingly, there is no teaching or suggestion of this feature of Applicants' independent claims in the primary reference or any of the secondary references. Further, the Hoenig device is designed to dehumidify air, by electrostatically charging water droplets due to

the dipole momentum of water molecules and depositing them on a cooled deposition electrode. The deposition electrode is cooled to disallow re-evaporation of the deposited water. Therefore, it is the aim of the prior art instrument to change the thermodynamic condition "relative humidity". Further, it also changes the temperature of the aerosol.

Moreover, a "gas flow splitter" for separating the particle free gas stream from the particle laden gas stream is not realized in the Hoenig device. Rather, this prior art device only contains a drain for the water, which is not used to split the flows.

The dependent claims are allowable for the same reasons as the independent claims from which they all ultimately depend, as well as for their additional limitations. For example, claim 2, as now presented, requires that the particle charger produce no change to the aerosol when inactivated. In contrast, the charging units (6, 12) of Hoenig are always present in the aerosol flow and hence will lead to unwanted particle deposition and changes of the aerosol if used without current.

Claim 3, as amended, now specifies that the particle charger includes a permeable electrode extending substantially parallel to the aerosol flow. In contrast, the grid electrodes (28, 30) of the Hoenig device extend perpendicular to the aerosol flow.

Claims 4 and 5 relate to the wash flow to prevent gases, formed by the corona discharge, from mixing with the aerosol's gas phase. The supposed "wash flow" in the Reif patent is completely different from that of the claimed invention.

In the gas inlet section of Reif's electro-inertial precipitator, the wire is mounted by means of an insulating rod. If conducting particles would deposit on that insulating rod (not on the corona wire!) they may cause a short circuit. Therefore, pressurized air is introduced into the hollow rod and leaves it through a circumferential array of holes to "blow away" the particles from the rod surface. This has no influence on the gas formation by the corona and on mixing of these gases with the aerosol. The introduction of a wash flow for minimizing an effect of the discharge on the gas phase cannot be done like this, as a mixing of wash flow and aerosol flow will always occur with such a set up, due to the perpendicular flow directions. The wash flow, as claimed for the present invention is parallel to the aerosol flow and separated therefrom by the

permeable electrode. No such structure or feature is taught or suggested by the applied references.

Applicants' claims 9 and 10 relate to the permeable grid electrode defining an interior corona discharge area and an exterior aerosol charging zone, and to the application of a voltage to the permeable grid electrode to produce an electric field for transporting ions through openings in the electrode. In contrast, in Cooke (U.S. Patent No. 1,605,648) the grid electrode is grounded, and the space between the grid and the outer wall is passive, i.e. with no electric field. The permeable grid of the present invention is such that flows interior and exterior of the grid do not mix, i.e. no cross flow occurs like in the Cooke device.

Applicants' claims 11 and 12 are directed to means for measuring ionic current produced by the corona discharge in combination with means, for controlling ion production by said corona discharger. The applied Ilmasti patent (U.S. Patent No. 6,287,368) measures the ionizing current, i.e. the current supplied by the power supply, rather than the ionic current, i.e. the current formed by the ions, as claimed.

Applicants' claim 13 specifies that the gas particle partitioner further includes an aerosol inlet for producing a laminar flow of the aerosol to the particle charger. The applied secondary reference of Torok et al. (U.S. Patent No. 5,024,685) does not mention laminar flow conditions, but rather only that the flow rates in the device are low due to the large flow areas.

Applicants' claim 18 specifies that the gas particle partitioner includes a shunt resistor for minimizing switching dead time. This shunt resistor is used (in parallel!) to discharge capacitors inside the voltage supply and therefore decrease the transient time when the supply is being switched off. No such shunt resistor is used in the applied references. In the device of Torok, serial resistors are used between the voltage supply and the respective electrodes. These serial resistors cannot serve to decrease transient switching times of the voltage supply, as claimed.

Applicants' claim 19 specifies that the conducting material of the corona discharge wire comprises silver. Silver is not mentioned at all in the Marshall reference (U.S. Patent No. 1,801,515) cited by the Examiner.

For all of the above reasons, the claims of this application are believed to be in condition for allowance, and such action is respectfully requested.

A request for a one-month extension of time and the associated fee are enclosed.

If it would advance the prosecution of this application, the Examiner is respectfully requested to call Applicants' attorney at the below listed telephone number.

Respectfully submitted,

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